

Serial No. 10/501,723
Atty. Doc. No. 2001P21301WOUS

REMARKS

Claims 12-30 are pending in this application. Claim 23 stands rejected under section 102(b) as being anticipated by US Pat. No. 4,111,603 (Stahl). Claims 24 and 26 stand rejected under section 103(a) as being unpatentable over Stahl and further in view applicant's alleged admissions. Claims 12-16, 19-20, 25 and 28-30 stand rejected as being unpatentable over Stahl, in view of applicant's alleged admissions and further in view of US Pat. No. 6,514,046 (Morrison). Various additional combinations of secondary references were applied to reject other dependent claims. Applicants respectfully requests reconsideration of the rejections in view of the foregoing amendments and the following remarks.

Claims 12, 23 and 24 have been amended to emphasize aspects of the present invention. Claims 17 and 22 have been cancelled. Claims 1-11 were previously cancelled. Accordingly, claims 12-16, 18-21 and 23-30 are presently pending in the present application.

Claim 12 is directed to a gas turbine blade for a fourth stage and onward of a multi-stage turbine. The blade includes a root, platform and airfoil that are collectively made up of a plurality of materials in which at least 40% by volume of the materials have a density of at most 4 g/cm³, wherein the density by volume provided by the plurality of materials allows providing a length of at least 50 cm for a blade disposed in the fourth stage and onward of the multi-stage turbine. Basis for the foregoing amendment may be found at least in the abstract, and in paragraphs 6, 8, 25, 26 of the publication document of the present invention.

Applicant respectfully submits that the combination applied by the Examiner to reject claim 12 fails to teach or suggest the claimed invention. Moreover, applicant respectfully points out that the inventor's explanation of how the invention works should not be used to support an obviousness rejection. Also, none of the applied references, individually or in combination, teaches or suggests the specific structural and/or operational relationships recited in claim 12. Applicant points out that numerical recitations and ranges in the claim language should not be overlooked. The Federal

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Circuit has explained that when a measured property serves to point up the distinction over the prior art, or advantages over the prior art, that property is relevant to patentability, and its numerical parameters can not only add precision to the claims but also may be considered in the determination of patentability. *In Re Glaug*, 283 F.3d 1335, 62 USPQ2ed 1151 (Fed. Cir. 2002).

In the presently claimed invention, the density by volume provided by the plurality of materials allows providing a length of at least 50 cm for a blade disposed in the fourth stage and onward stages of the multi-stage turbine. These are real and practical advantages over the prior art and should not be summarily dismissed under the simplistic label of mere design choices. In view of the foregoing, it is respectfully submitted that the obviousness rejections of claim 12 (and claims depending there from) should be withdrawn since none of the applied art (individually and in combination) teaches or suggests the specific structural and/or operational relationships that advantageously result in an improved gas turbine blade for at least the fourth stage and onward stages of a multi-stage gas turbine, which is conducive to achieving relatively higher efficiencies in the gas turbine.

Regarding the anticipation rejection of claim 23, this claim is directed to a turbine blade for a fourth stage and onward of a multi-stage turbine. The blade includes a root portion connected to a rotor disk. The blade further includes a tip portion having a first section located adjacent to the root portion, wherein the first section comprises a material having a first density. The tip portion further has a second section located adjacent to the first section consisting exclusively of a ceramic material having a second density different than the first density and extending at least 80% of the length of the tip portion. At least 40% by volume of the first and second sections have a density of at most 4 g/cm³, wherein the density by volume achieved over the first and second sections of the tip portion allows providing a length of at least 50 cm for a blade disposed in the fourth stage and onward of the multi-stage turbine.

It should be apparent that Stahl cannot constitute an appropriate *prima facie* reference for sustaining a 102 rejection. A 102 rejection requires that there must not be any differences between the claimed invention and the reference disclosure as viewed

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by a person of ordinary skill in the art. Absent from the reference disclosure of any claim element and/or operational interrelationship negates anticipation under §102. Applicant respectfully submits that Stahl fails to anticipate or otherwise render unpatentable the claimed invention. Consequently, this rejection should also be withdrawn.

Claim 24 is directed to a gas turbine blade for a fourth stage and onward of a multi-stage turbine. The blade is made up of at least one material in which at least 40% by volume of the material has a density of at most 4 g/cm^3 . The density by volume achieved by the at least one material allows providing a length of at least 50 cm for a blade disposed in the fourth stage and onward of the multi-stage turbine. Applicant respectfully submits that the combinations applied by the Examiner to reject claim 23 (and claims depending there from) under section 103(a) similarly fail to teach or suggest the claimed invention. Consequently, these rejections should also be withdrawn.

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Conclusion

For the foregoing reasons, it is respectfully submitted that the present claims comply with all applicable statutory requirements, and consequently are in form ready for allowance. Accordingly, applicant respectfully requests that the Examiner withdraw the rejections and timely pass the application to allowance.

The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including the fees specified in 37 C.F.R. §§ 1.16 (c), 1.17(a)(1) and 1.20(d), or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

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